



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/699,086	10/31/2003	Richard H. Holtman	27581/01745	1846

4743 7590 07/08/2004

MARSHALL, GERSTEIN & BORUN LLP
6300 SEARS TOWER
233 S. WACKER DRIVE
CHICAGO, IL 60606

EXAMINER

TRIEU, THAI BA

ART UNIT

PAPER NUMBER

3748

DATE MAILED: 07/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/699,086	Applicant(s) HOLTMAN ET AL.
	Examiner Thai-Ba Trieu	Art Unit 3748

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 10-14 and 18-21 is/are rejected.
- 7) ☒ Claim(s) 7-9 and 15-17 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10/31/03 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>02/17/2004</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION***Drawings***

The drawings are objected to because ***"a hot gas outlet 126"*** should indicate the line from the vortex tube 120 to the exhaust conduit 39, instead of the line from a reduction valve 150 to the line connected between vortex tube 120 and an exhaust conduit 39 (See Figure 2). Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-4, 6, 10, 12, 14, 18, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Medvedev et al. (Patent Number RU 20 90 774).

Regarding claims 1, 3-4, 12, 14, Medvedev discloses an engine comprising:

an exhaust conduit (13),

an intake conduit (15, 16),

a primary exhaust gas recirculation conduit (17) for recirculating at least a portion of gases flowing through the exhaust conduit into the intake conduit (15),

the primary exhaust gas recirculation conduit (17) being in fluid communication with a vortex tube (20) disposed between the exhaust conduit (12) and the intake conduit (15), the vortex tube (20) having an inlet in fluid communication with the exhaust conduit (via 17), a cold gas outlet (via 24) in fluid communication with the intake conduit, and a hot gas outlet (via 21) (See attached Figure and Abstract);

an exhaust gas recirculation valve (Not Numbered) (See attached Figure);

wherein recirculation valve is disposed in a cold exhaust gas recirculation conduit (24) that connects the cold gas outlet in fluid communication with the

Art Unit: 3748

intake conduit (15) (See attached Figure, Abstract, Page 3, Column 2, lines 52-66, and Page 4, Column 1, lines 1-2).

Regarding claims 6, 10, 18, Medvedev further discloses the hot gas outlet being in fluid communication with a turbine section (9) of a turbocharger (See attached Figure); and a bypass conduit (12) providing a fluid connection between the exhaust gas conduit and the cold exhaust gas recirculation.

Regarding claim 20, Medvedev discloses a method of recirculating exhaust gases in an internal combustion engine having a combustion chamber, the method comprising:

diverting at least a portion of exhaust gases (via 17);
cooling at least a portion of the diverted exhaust gases in a vortex tube (20); and
reintroducing the cooled exhaust gases (via 24) into the combustion chamber
(via 15, 16) (See Figure and Abstract).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 5, 11, 13, 19, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Medvedev et al. (Patent Number RU 20 90 774), in view of Sheridan et al. (Patent Number 5,617,726).

Medvedev discloses the invention as recited above, and further disclose a venturi (11); however, Medvedev fails to disclose the location of the venturi and the exhaust gas recirculation valve being electronically controlled, an electronic control unit and at least one sensor.

Sheridan teaches that it is conventional in the art of turbocharged internal combustion engine having an exhaust gas recirculation system, to locate a venturi (15) in fluid communication with the exhaust gas conduit end the intake conduit, and to utilize the exhaust gas recirculation valve (23, 23') being electronically controlled (via ECU 24), an electronic control unit (ECU 24) and at least one sensor operatively to the electronic control unit, wherein the electronic control unit is adapted to generate appropriate control signals for use in controlling the flow of recirculated exhaust gases based upon output signals received from the sensor (See Figures 1-6, Column 3, lines 32-58).

It would have been obvious to one having ordinary skill in the art at that time the invention was made, to have positioned a venturi in fluid communication with the exhaust gas conduit end the intake conduit, and utilized the exhaust gas recirculation valve being electronically controlled, an electronic control unit, and at least one sensor, as taught by Sheridan, to pressurize the mixture of exhaust gas and air intake to the

Art Unit: 3748

engine and to improve the control of the exhaust gas flow rate, in the Medvedev device, since the use thereof would have reduced the exhaust emissions.

Allowable Subject Matter

Claims **7-9, and 15-17** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The IDS (PTO-1449) filed on February 17, 2004 has been considered. An initialized copy is attached hereto.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Linderg (US Patent Number 4,503,813) discloses an engine combustion control system and a method employing condensation of some exhaust gas.

- Linderg (US Patent Number 4,270,508) discloses a combustion control system having exhaust gas recirculating in the conduit 126 through a vortex 124 and reentering the intake manifold 24.

- Suzuki (US Patent Number 4,587,807) discloses an apparatus for totally recycling engine exhaust gas.

Art Unit: 3748

- Herzog (US Patent Number 5,351,669) discloses a valve device for exhaust feedback in an internal combustion engine.

- Lundqvist (US Patent Number 6,502,397 B1) discloses a device transfer of exhaust gas from the exhaust collector of a supercharged internal combustion engine to the inlet conduit thereof.

- Sponton (Pub. Number US 2004/0007220 A1) discloses a method and a device for exhaust recycling and supercharged diesel engine.

- Beck et al. (US Patent Number 6,742,335 B2) disclose an EGR control system and a method for an internal combustion engine.

- Hino (Patent Number JP 2002-070657 A) discloses an exhaust gas recirculation device for a motor vehicle having a vortex tube with cold air outlet connected to cold air emission path.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thai-Ba Trieu whose telephone number is (703) 308-6450. The examiner can normally be reached on Monday - Thursday (6:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion can be reached on (703) 308-2623. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TTB
July 7, 2004

Thai-Ba Trieu
Patent Examiner
Art Unit 3748

